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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/320,643	05/27/1999	MARCO PIVA	Q-54188	5053

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SUGHRUE MION ZINN MACPEAK & SEAS PLLC  
2100 PENNSYLVANIA AVENUE NW  
WASHINGTON, DC 200373213

EXAMINER
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LEE, DIANE I

ART UNIT	PAPER NUMBER
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2876

DATE MAILED: 01/29/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
09/320,643

Applicant(s)  
PIVA et al.

Examiner  
Diane Lee

Art Unit  
2876



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 8/30/01 and 10/9/01
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 36, 37, 42-50, 52-67, and 71-78 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 36, 37, 42-50, and 52-67 is/are rejected.
- 7) ☒ Claim(s) 71-78 is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some\* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 20) ☐ Other:

### DETAILED ACTION

1. Receipt is acknowledged of the Response to Election of Restriction Requirement filed 30 August 2001 which applicants provisionally elect to prosecute Group I, claims 36, 37, 42-50, 52-67, drawn to "an apparatus for reading optical codes placed at variable distances," without traverse.

2. Claims 38-41, 51, 68-71 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected claims.

3. Receipt is acknowledged of the Supplemental Amendment filed 09 October 2001. Claims 71-78 have been newly added. Currently claims 36, 37, 42-50, 52-67, and 71-78 are pending in this application.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 36, 37, 42-46, 48-50, 52-55, and 62-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilt et al. [US 5,737,122-referred as Wilt] in view of Roustaei [US 5,532,467].

1           Re claims 36, 37, 45-46: Wilt discloses an illumination system for an optical code reading apparatus  
2 (see the abstract and col. 1, lines 54+), comprising:

3           a casing 100 (see figures 4-6);

4           a reading window open into the casing (see figure 5);

5           an illuminating means 118, 120 housed within the casing and arranged to act on an optical code to be  
6 read through the reading window (see figure 5);

7           a detection means 76 responsive to light scatter from the light illuminated optical code into the casing  
8 through the reading window (see figures 4-9);

9           an objective lens 78, 104 having an optical axis, the objective lens being housed within the casing  
10 between the reading window and the detection means and being located to pick up light scattered from the  
11 illuminated optical code 110 and project the picked-up light onto the detection means. Wherein the detection  
12 means comprises a plurality of light-sensitive elements capable of converting the light to electric signals  
13 representing the light image, e.g., 6.6 x 8.8 mm charge coupled device (CCD sensor) (see col. 6, lines 24+  
14 and figures 4-6);

15           wherein the illumination means comprises a first array of light sources 118 and at least second array  
16 of light sources 120 and the first and second array of light sources being selectively activated in order to  
17 define a first illumination configuration for illuminating an optical code placed within a first optical path and  
18 at least a second illumination configuration, different from the first one, for illuminating an optical code  
19 having a second optical path, the second optical path being different from the first optical path (see col. 7,  
20 lines 52+ and figures 5-6).

1           Wilt does not teach the first and the second illuminating configurations for illuminating an optical  
2 code placed within a first distance range and a second distance range differ from the first distance range,  
3 respectively.

4           Roustaei discloses an optic scanning head for reading bar code symbols at variable distance from the  
5 symbol which uses LED light sources and CCD detector (see col. 1, lines 52+; col. 2, lines 24+). The  
6 scanning head includes a plurality pair illumination being oriented to emit light at different angles and by  
7 regulating/modulating the voltage to the LEDs, the intensity of light is adjusted for codes that are places at a  
8 short distance (i.e., a first distance) and a greater distance (i.e., a second distance different from the first  
9 distance). Therefore, providing a full power to the LEDs for the maximum scanning distance and decrease  
10 the intensity of light from LEDs by lowering the power to the LEDs for a short scanning distance (see col. 6,  
11 lines 5+).

12           In view of Roustaei's teaching, it would have been obvious to an artisan of ordinary skill in the art at  
13 the time the invention was made to incorporate the scanning head with modulating voltage supply to modulate  
14 the intensity of the LEDs in order to provide various illuminating configurations (i.e., various intensity) in  
15 order to read the code at variable distance with minimum power consumption.

16           Re claim 42: Wilt teaches the first array of light sources comprises a plurality of light source pairs  
17 and with combined figures 5-6, Wilt shows that each pair in turn comprising responsive light sources  
18 symmetrically arranged with respective light sources symmetrically arranged with respect to the optical axis  
19 of the objective lens and aligned along a substantially perpendicular direction to the optical axis. The light  
20 sources lying in a first emission lay intersecting the optical axis and the light sensitive elements of the  
21 detection means.

1 Re claims 48 and 50: from figures 4-5, Wilt shows that the light system having baffles (94, 96, 132,  
2 134), the housing of the LED, mirrors, and a window combined together as a means to prevent the dispersion  
3 of the light beam thereby confining the light beam from the first array of light sources within a predetermined  
4 reading area. The casing/housing of the LED being a holder element for the plurality of light source pairs  
5 which formed with a respective seat for the light sources and seats having respective sidewalls shaped to  
6 confine the light beam from each source within the predetermined reading area.

7 Re claims 52 and 62: Wilt teaches that the first array of light source for reading soft mark and the  
8 second array of light source which is a broad spectrum incandescent lamps for reading hard marks thereby the  
9 plurality of second light sources have a lower light intensity than the sources in the first array of light sources  
10 (see col. 6, lines 46+).

11 Re claims 53-54: Wilt shows the second light sources are housed within the casing symmetrically  
12 with respect to the optical axis of the objective lens (see figure 6) so as to be aligned to one another in a  
13 second emission layer which is different from the first one. Wherein the second light sources are housed within  
14 the casing centrally with respect to the first array of light sources and wherein the second emission layer is  
15 lower than the first emission layer, i.e., with respect to the lower portion of the light illumination as shown in  
16 figure 6.

17 Re claim 49: Although Wilt teaches the light source is provided with a mask 54, 84 for confining the  
18 light beam having the first array of light sources having a rectangular shaped masking element associated  
19 with the casing at the location of the reading window, he does not teach the mask having a ring shaped.

20 However it would have been obvious design variation to an artisan of ordinary skill in the art at the  
21 time the invention was made to utilize the different shape of mask (e.g., rectangular, circular or ring) in the  
22 reading device of Wilt in order to accommodate the types of code/image being read and its illumination

1 requirement and thereby obtain best reading results. Furthermore, due to the fact that the variety shape of  
2 masks are readily available, choosing the best shape mask in the reader to accommodate the type of optic  
3 device, the reading window, visibility of reading substrate, and the sensitivity of the optic sensor would have  
4 been an obvious expedient.

5 Re claims 55 and 63: Although Wilt teaches the first array of light sources having a two pairs  
6 discrete plastics LEDs and the first and second array of light sources each having different intensity, he does  
7 not teach the specifics of the second array of light sources having four SMD plastics LEDs.

8 However it would have been obvious to an artisan of ordinary skill in the art at the time the invention  
9 was made to modify type of the light source by utilizing different type of light source in the reader of Wilt in  
10 order to accommodate illumination requirements with given optic components therein. Therefore,  
11 implementing four SMD plastics LEDs or any other types in the second array of light sources would have  
12 been an obvious extension taught by Wilt and would have been an obvious design variation. Accordingly, it  
13 would have been an obvious expedient.

14 Re claims 43-44: Wilt does not disclose the light source includes a pair of outward sources and  
15 inward sources each disposed in an offset position from the optical axis with a specific angle,  $\alpha$  and  $\beta$ ,  
16 respectively such that the angle  $\beta$  is smaller than angle  $\alpha$ .

17 Roustaei discloses an optic scanning head having plurality pair illumination being oriented to emit  
18 light at different angles such that the outward pair of light sources having an offset position from the optic  
19 axis with an outward angle (the optic axis defined by optic module 17) and the inward pair of light sources  
20 having an offset position from the optic axis with an inward angle thereby the outward angle is smaller than  
21 the inward angle (see figure 1).

1 In view of Roustaei's teaching, it would have been obvious to an artisan of ordinary skill in the art at  
2 the time the invention was made to incorporate the LED arrangement configuration (i.e., each pair of light  
3 emitting at different angles) in the teaching of Wilt in order to create an illumination having a fan of light  
4 which illuminating the light symmetrically for better reading results.

5 6. Claims 47, 56-61, 64-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilt as  
6 modified by Roustaei as applied to claim 36 above, and further in view of Wang et al. [US 5,521,366]. The  
7 teachings of Wilt as modified by Roustaei have been discussed above.

8 Re claim 47: Although Wilt teaches the CCD sensor as a detection means therein, Wilt as modified  
9 by Roustaei is silent with respect to the specifics of the detection means being a CMOS sensor.

10 Wang discloses a dataform reader having a casing, an illuminating means 50, 52, a two dimensional  
11 array of sensor cells 20 as a detection means, and objective lens 56. Wang discloses the arrangement of the  
12 two dimensional array sensor cells which associated with a gain control, focus sensing and exposure control  
13 circuitry all integrated into a single chip such as CMOS chip to provide a lower power requirement in the  
14 reader (see the abstract and col. 5, lines 38+).

15 In view of Wang's teaching, it would have been obvious to an artisan of ordinary skill in the art at the  
16 time the invention was made to incorporate the CMOS technology (i.e., incorporating the two dimensional  
17 array sensor cells which with a gain control, focus sensing and exposure control circuitry implemented on a  
18 single chip) in the optical code reading device of Wilt as modified by Roustaei in order to provide a lower  
19 power consumption in the optical reading device and for the advantage of light weight, cost advantages, and  
20 establishing the production techniques (i.e., in a single chip size).

21 Re claims 56-61, 64-67: Although Wilt teaches the illumination system for an optical code reading,  
22 i.e., for Optical Character Recognition (OCR) of indicia on a substrate which obviously includes a decoding



1 means and wherein the CCD sensor detects the light intensity of the light scattered from the optical code, Wilt  
2 as modified by Roustaei is silent with respect to the process of comparing the outline of the intensity with a  
3 reference outlined to activate the light source according to the result of the decoding attempt including the  
4 distance measured.

5 Wang discloses the CPU 88 as a means for decoding the optical code (see col. 9, lines 62+ and  
6 figures 5-6). The result of decoding attempts ( i.e., upon a successful/unsuccessful decoding operation,  
7 adjusting the reading distance between the reader and the target), the exposure illumination is turned on.  
8 From figures 2 and 5, Wang shows the decoding means coupled to an exposure control device (64, 64a) and a  
9 gain control device (60, 60a) to provide start and stop signals usable for beginning and terminating as  
10 exposure period. Therefore, the exposure control device monitors the sample image data and when the sample  
11 image data indicates that the level of reflected light from the target area has reached a predetermined level, the  
12 exposure control device generates a stop signal. Wang further shows the decoding means is also coupled to  
13 gain control device (60, 60a) and the focus device (62, 62a) to select an appropriate amplitude gain and offset  
14 signal to apply to the sensor array amplifier in the sensor which obviously includes the means for comparing  
15 the intensity with a reference intensity and the means to varying the amplification level of the electric signals  
16 generated by the detection means. Col.8, lines 59+ and figure 6 illustrate the specifics of operation process.

17 It would have been obvious to an artisan of ordinary skill in the art at the time the invention was  
18 made to incorporate the decoding means, gain control device, focus device, and the process of comparing the  
19 intensity with a reference intensity to vary the intensity in the system of Wilt as modified by Roustaei in order  
20 to increase the imaging accuracy and provide a reliable optical code apparatus.

*Allowable Subject Matter*

7. Claims 71-72, 73, 74-78 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: the best prior art of record, Wilt as modified by Roustaei and Wang does not teach or fairly suggest optical code reader having a device for widening the angle of the emitting beam along the direction of alignment of the first array of light sources and narrowing the angle of the emitting beam along the perpendicular direction to the first emission lay, and a converting device having a main digitalizer and an auxiliary digitalizer and wherein the sensitivity of the auxiliary digitalizer is higher than the main digitalizer which is used to provide the specifics of the setting/switching mode having different configuration mode, as set forth in the claims.

*Response to Arguments*

9. Applicant's arguments with respect to respect to newly added claims (e.g., specifically claims 36 and 37) have been considered but are moot in view of the new ground(s) of rejection.

10. In response to applicant's argument with respect to newly introduced features in claims 36 and 37 (e.g., "the optical codes to be read are placed at variable distance" and "for illuminating an optical code placed within a first distance range"; the first illumination configuration is "for illuminating an optical code placed within a first distance range"; and the second illumination configuration is "for illuminating an optical code placed within at least a second distance and said at least a second distance range being different from said first distance range"), and that non of prior art disclose the claimed invention (see page 24, lines 8+); the examiner respectfully disagrees. Wilt discloses the optical code reading apparatus having a first and second

1 array of light sources wherein the first and second array of light sources are selectively activated in order to  
2 respectively define a first illumination configuration for illuminating an optical code placed at a first optical  
3 path and at least a second illumination configuration, different from the first one, for illuminating an optical  
4 code placed within at least a second optical path different from the first one. Roustaei reference was brought  
5 in the rejection to provide the specific limitation that lacks in Wilt as modified by Roustaei. Wilt teaches the  
6 reader reading having first and second illumination configurations for a code placed at a first and second  
7 distance range different from the first one, and Roustaei discloses an optic scanning head for reading bar code  
8 symbols at variable distance from the symbol which uses LED light sources and CCD detector (see col. 1,  
9 lines 52+; col. 2, lines 24+). The scanning head includes a plurality pair illumination being oriented to emit  
10 light at different angles and by regulating or modulating the voltage to the LEDs, the intensity of light is  
11 adjusted for codes that are placed at a short distance (i.e., a first distance) and a greater distance (i.e., a second  
12 distance different from the first distance). Therefore, providing a full power to the LEDs for the maximum  
13 scanning distance and decrease the intensity of light from LEDs by lowering the power to the LEDs for a  
14 short scanning distance (see the discussion above).

15  
16 *Conclusion*

17 11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.  
18 Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the  
19 extension of time policy as set forth in 37 CFR 1.136(a).

20 A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the  
21 mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of  
22 this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened

1 statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and  
2 any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory  
3 action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date  
4 of this final action.

5 12. Any inquiry concerning this communication or earlier communications from the examiner should be  
6 directed to *Diane I. Lee* whose telephone number is (703) 306-3427. The examiner can normally be reached  
7 between the hours of 7:00AM to 4:30PM Monday thru Thursday and every other Friday (first Friday of the  
8 bi-week).

9 If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael  
10 Lee, can be reached on (703) 305-3503. The fax phone number for this Group is (703) 308-7722.

11 Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132  
12 or which otherwise require a signature, may be used by the applicant and should be addressed to  
13 [michael.lee@uspto.gov].

14 All Internet e-mail communications will be made of record in the application file. PTO employees  
15 do not engage in Internet communications where there exists a possibility that sensitive information could be  
16 identified or exchanged unless the record includes a properly signed express waiver of the confidentiality  
17 requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published  
18 in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

19 Any inquiry of a general nature or relating to the status of this application or proceeding should be  
20 directed to the Group receptionist whose telephone number is (703) 308-0956.

21  
22 

23 D. Lee  
24 Art Unit 2876  
25 January 28, 2002

  
MICHAEL G. LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800